CLAIMS

1. A method of detecting apoptosis, comprising:
preparing a sample from which cells have been removed; and
detecting at least one of nucleolin and PARP-1 in the sample.

2. The method of claim 1, wherein the sample is blood, serum, plasma, tissue, tissue culture medium or sputum.

3. The method of claim 1, wherein the detecting comprises membrane disruption.

4. The method of claim 1, wherein the detecting is detecting nucleolin, and the detecting nucleolin comprises detecting a nucleolin binding molecule-nucleolin complex.

5. The method of claim 4, wherein the nucleolin binding molecule comprises an anti-nucleolin antibody.

6. The method of claim 5, wherein the antibody is selected from the group consisting of p7-1A4, sc-8031, sc-9893, sc-9892, 4E2 and 3G4B2 antibodies.

7. The method of claim 6, wherein the nucleolin binding molecule comprises a guanosine-rich oligonucleotide.

8. The method of claim 7, wherein the guanosine-rich oligonucleotide comprises an oligonucleotide having a nucleotide sequence of SEQ ID NO:1-7; 9-17; 19-30 or 31.

9. The method of claim 8, wherein the guanosine-rich oligonucleotide comprises an oligonucleotide having a nucleotide sequence of SEQ ID NO:1, 10, 25-30 or 31.

10. The method of claim 1, wherein the detecting is detecting PARP-1, and the detecting PARP-1 comprises detecting a PARP-1 binding molecule-PARP-1 complex.

11. The method of claim 10, wherein the PARP-1 binding molecule comprises an anti-PARP-1 antibody.

12. The method of claim 11, wherein the antibody is selected from the group consisting of sc-1562, sc-8007, sc-1561, sc-1561-Y and sc-7150 antibodies.

13. A method of detecting excessive apoptosis in a subject, comprising:

preparing a blood sample from which cells have been removed; and

detecting at least one of nucleolin and PARP-1 in the sample.

14. The method of claim 13, wherein the subject is suspected of having a disease selected from the group consisting of Acquired Immunodeficiency Syndrome, a neurodegenerative disease, an ischemic injury, an autoimmune disease, a tumor, a cancer, a viral infection, an acute inflammatory condition and sepsis.

15. The method of claim 13, wherein the subject is suspected of having cancer.

16. The method of claim 15, wherein the cancer is selected from the group consisting of endocervical adenocarcinoma, prostatic carcinoma, breast cancer, leukemia and non-small cell lung carcinoma.

17. A kit for detecting apoptotic bodies, comprising:

a reagent comprising an antibody that binds to either nucleolin or PARP-1, or a guanosine-rich oligonucleotide that binds nucleolin; and

means for removing cells from a sample.

18. The kit of claim 17, wherein the means comprises a filter.

19. The kit of claim 18, wherein the means further comprises a syringe.

20. The kit of claim 17, wherein the kit further comprises a syringe.

21. The kit of claim 17, further comprising an anti-coagulant.

22. The kit of claim 17, further comprising a reagent to disrupt membranes.

23. The kit of claim 17, wherein the reagent comprises an antibody that is selected from the group consisting of p7-1A4, sc-8031, sc-9893, sc-9892, 4E2 and 3G4B2 antibodies.

24. The kit of claim 17, wherein the reagent comprises an antibody that is selected from the group consisting of sc-1562, sc-8007, sc-1561, sc-1561-Y and sc-7150 antibodies.

25. The kit of claim 17, wherein the reagent comprises a guanosine-rich oligonucleotide comprising a sequence of SEQ ID NOs: 1-7; 9-17; 19-30 or 31

26. The kit of claim 25, wherein the reagent comprises a guanosine-rich oligonucleotide comprising a sequence of SEQ ID NO:1-7; 9-17; 19-30 or 31.

27. The method of claim 26, wherein the reagent comprises a guanosine-rich oligonucleotide comprising a sequence of SEQ ID NO:1, 10, 25-30 or 31.

28. A method of determining if a compound induces apoptosis, comprising:

contacting a cell with the compound; and

detecting apoptosis by the method of claim 1.

29. The method of claim 28, wherein the sample is blood, serum, plasma, tissue, tissue culture medium or sputum.

30. The method of claim 28, wherein the detecting comprises membrane disruption.

31. The method of claim 28, wherein the detecting is detecting nucleolin, and the detecting nucleolin comprises detecting a nucleolin binding molecule-nucleolin complex.

32. The method of claim 31, wherein the nucleolin binding molecule comprises an anti-nucleolin antibody.

33. The method of claim 32, wherein the antibody is selected from the group consisting of p7-1A4, sc-8031, sc-9893, sc-9892, 4E2 and 3G4B2 antibodies.

34. The method of claim 31, wherein the nucleolin binding molecule comprises a guanosine-rich oligonucleotide.

35. The method of claim 34, wherein the guanosine-rich oligonucleotide comprises an oligonucleotide having a nucleotide sequence of SEQ ID NO:1-7; 9-17; 19-30 or 31.

36. The method of claim 35, wherein the guanosine-rich oligonucleotide comprises an oligonucleotide having a nucleotide sequence of SEQ ID NO:1, 10, 25-30 or 31.

37. The method of claim 28, wherein the detecting is detecting PARP-1, and the detecting PARP-1 comprises detecting a PARP-1 binding molecule-PARP-1 complex.

38. The method of claim 37, wherein the PARP-1 binding molecule comprises an anti-PARP-1 antibody.

39. The method of claim 38, wherein the antibody is selected from the group consisting of sc-1562, sc-8007, sc-1561, sc-1561-Y and sc-7150 antibodies.

40. A method of detecting apoptosis in a cell culture, comprising the method of claim 1.

41. The method of claim 41, wherein the cell culture is grown in a bioreactor.